Process	Kalman filter (KF)	Extended Kalman filter (EKF)	Unscented Kalman filter (UKF)
Prediction	$\bar{\mathbf{x}} = \mathbf{F}\mathbf{x} + \mathbf{B}\mathbf{u}$	$\bar{\mathbf{x}} = f(\mathbf{x}, \mathbf{u})$, $\mathbf{F} = \left.\frac{\partial f(\mathbf{x}_t, \mathbf{u}_t)}{\partial \mathbf{x}}\right\rvert_{\mathbf{x}_t, \mathbf{u}_t}$	$\bar{\mathbf{x}} = \sum w^m \boldsymbol{\mathcal{Y}}$, $\boldsymbol{\mathcal{Y}} = f(\chi)$
(Time update)	$\bar{\mathbf{P}} = \mathbf{F}\mathbf{P}\mathbf{F}^\top + \mathbf{Q}$	$\bar{\mathbf{P}} = \mathbf{F}\mathbf{P}\mathbf{F}^\top + \mathbf{Q}$	$\bar{\mathbf{P}} = \sum w^c (\boldsymbol{\mathcal{Y}} - \bar{\mathbf{x}})(\boldsymbol{\mathcal{Y}} - \bar{\mathbf{x}})^\top + \mathbf{Q}$
			$\boldsymbol{\mu}_z = \sum w^m \boldsymbol{\mathcal{Z}}$, $\boldsymbol{\mathcal{Z}} = h(\boldsymbol{\mathcal{Y}})$
Update	$\mathbf{y} = \mathbf{z} - \mathbf{H}\bar{\mathbf{x}}$	$\mathbf{y} = \mathbf{z} - h(\bar{x})$, $\mathbf{H} = \left.\frac{\partial h(\bar{\mathbf{x}}_t)}{\partial \bar{\mathbf{x}}}\right\rvert_{\bar{\mathbf{x}}_t}$	$\mathbf{y} = \mathbf{z} - \boldsymbol{\mu}_z$
(Measurement update)	$\mathbf{S} = \mathbf{H}\bar{\mathbf{P}}\mathbf{H}^\top + \mathbf{R}$	$\mathbf{S} = \mathbf{H}\bar{\mathbf{P}}\mathbf{H}^\top + \mathbf{R}$	$\mathbf{P}_z = \sum w^c (\boldsymbol{\mathcal{Z}} - \boldsymbol{\mu}_z)(\boldsymbol{\mathcal{Z}} - \boldsymbol{\mu}_z)^\top + \mathbf{R}$
	$\mathbf{K} = \bar{\mathbf{P}}\mathbf{H}^\top\mathbf{S}^{-1}$	$\mathbf{K} = \bar{\mathbf{P}}\mathbf{H}^\top\mathbf{S}^{-1}$	$\mathbf{K} = \left[\sum w^c (\boldsymbol{\mathcal{Y}} - \bar{\mathbf{x}})(\boldsymbol{\mathcal{Z}} - \boldsymbol{\mu}_z)^\top\right]\mathbf{P}_z^{-1}$
	$\mathbf{x} = \bar{\mathbf{x}} + \mathbf{K}\mathbf{y}$	$\mathbf{x} = \bar{\mathbf{x}} + \mathbf{K}\mathbf{y}$	$\mathbf{x} = \bar{\mathbf{x}} + \mathbf{K}\mathbf{y}$
	$\mathbf{P} = (\mathbf{I} - \mathbf{K}\mathbf{H})\bar{\mathbf{P}}$	$\mathbf{P} = (\mathbf{I} - \mathbf{K}\mathbf{H})\bar{\mathbf{P}}$	$\mathbf{P} = \bar{\mathbf{P}} - \mathbf{K}\mathbf{P}_\mathbf{z}\mathbf{K}^\top$